

showed that variety of home grown foodstuffs is by no means lacking, nor, knowledge of their preparation. There were no less than eleven starches and flours exhibited, made from home grown products, and nine jellies from locally grown fruits. There were ten varieties of bananas or plantains while all the native grown ground provisions were well represented.

The section for European grown vegetables was quite good, one exhibitor showing a fine dish of peas.

There is need, however, for the introduction of improved varieties of most products and the Department is taking steps to obtain these from the East African Agricultural Departments. The varieties of certain fruits are poor, especially the citrus and mangoes and here again the Department is endeavouring to improve the amenities by the propagation and distribution of better kinds. There is also need for experimentation with fruit and food crops suitable for the outlying madreporic Islands, the importance of securing adequate quantities of vitamin supplying vegetables and fruit for the labour employed on these islands cannot be overestimated. Unfortunately a limit is set on production by the prevalence of praedial larceny and until this evil is successfully combated and confidence reigns in the mind of the cultivator with regard to the safety of his crop, he is unlikely and unable to bring about a state of production so necessary for the general welfare of the community.

SECTION II. WORK OF THE DEPARTMENT.

(a) Botanical, Town and Hospital Gardens and Government House Grounds.

The above gardens were maintained in good order and the following improvements effected :—

Botanical Gardens. A new water lily pond was made in the Gardens adjacent and at a lower level to the pre-existing one. The site of the new pond was a swampy piece of ground through which flowed the overflow of the main pond. This alteration was easily accomplished and greatly improved the appearance of the surroundings to the main lawn. Tubers of 6 varieties of Lotus (*Nymphaea spp.*) were received from Kew and planted in the ponds. The varieties flowered, and included a deep crimson variety which has been much admired. The Department has had no success with germination of the seed of the giant lily (*Victoria regia*). Seed from Kew and Bombay have alike shown no signs of growing. At Kew it is found that two year seed germinates more successfully. The rockeries and terraces surrounding the ponds were greatly improved by a complete overhaul which included drastic pruning of shrubs, rearrangement, and planting of decorative subjects. The terraces on which are situated Araucaria trees, were cleared of shrubs in order to exhibit the full beauty of these fine specimens. A small area of land on the Hospital side of the main drive formerly used as a Nursery was added to the decorative section of the Gardens. The whole was grassed down and a series of flower beds were set out and planted with Cannas. In the upper part of the Gardens a plot of Rubber trees was removed and replaced by a plantation of Eucalyptus, representative of all the species introduced. This plantation links up with a plantation of *Eucalyptus alba*. The second Tapiot palm (*Corypha sp.*) to flower at the entrance of the Gardens proved a great attraction. The terminal inflorescence succeeded by the slowly ripening seeds persisted for a long period. It was necessary to remove this palm in view of the danger of collapse. A large India rubber tree (*Ficus lastica*) situated near the river was drastically pruned as it was covering too large an area.

It is noteworthy that two beautiful climbing plants, *Chonemorpha macrophylla* and *Camoencia maxima* received during recent years from Ceylon, have flowered. *Malviscus congettii* and *Olerodendron ugandense* brought from Kew in 1935, have proved valuable additions to the Gardens. There is ample evidence to show that a considerable reduction of scale pests has ensued since the introduction of the East African predators and a general healthier appearance is manifest throughout the Gardens.

It is pleasing to record that considerable numbers of Pigeon Hollandais (*Alectoroenas pulcherrima*) are frequently to be seen in the Gardens, principally

feeding on the fruits of various Ficus and Eucalyptus trees. This Pigeon was rarely noticed in the Gardens a few years ago.

The Garden drive was kept in good repair by the Department.

The following trees fruited well:— Mangosteen (*Garcinia mangostana*), Rambutan (*Nephelium lappaceum*), Kola (*Cola acuminata*), Jamalac (*Eugenia jambolana*) and Avocado (*Persea gratissima*).

The interesting group of Chaulmoogra trees which was planted around the Hospital continues to make good growth. There are three species, namely.— *Hydnocarpus winghtiana*, *H. anthelminticus* and *H. Kurzii*. The first named species again fruited well and *H. anthelminticus* fruited for the first time. Seeds are being collected for propagation at the new leper camp at Curieuse Island.

Town Gardens. A line of fan palms fronting the Carnegie Library which had grown to a height causing interference with electric light wires were removed and replaced by young plants of the same genus. The old hedge surrounding the grounds of the Treasury building was removed and replaced by a hedge of Campeche (*Pithecolobium unguisati*). Trees in the Fiennes Esplanade were pruned and certain trees of Bois de table (*Heritiera littoralis*) were removed. When the Sangdragon trees (*Pterocarpus indicus*) form an effective canopy over the avenue the Bois de table trees should be removed.

The sea walls of the Esplanade are in need of extensive repairs. During the spring tides the incursion of sea water causes continual losses of shrubs and grass. A certain amount of refilling of sunken areas was undertaken by the Department, but owing to the large amount of soil required to bring the level to above high water mark, and limited funds at the Department's disposal, the work was not completed.

A salubrious extension of the Esplanade is in progress, but as unfortunately its creation depends on the daily output of the Town garbage, filling in is necessarily very slow.

Government House Grounds. A summer house has been constructed on the rising ground behind Government House and the bank leading to it cleared and prepared for planting. An adjacent quarry has been converted into a vegetable garden. The flower beds surrounding the lawn were rearranged and improved.

(b) Coconut estates under Departmental control.

Curieuse Island. In November 1936 the Department took over the management of Curieuse Island. This Island which had been under lease since 1902 has a coconut yield of approximately 270,000 nuts per annum. Its area is stated to be 900 acres. The coconut plantations which are situated chiefly on the narrow coastal plateaux are divided off by rocky spurs running down to the sea, and as the nuts from the various areas have to be brought round by boat, the working of the Island is not a simple matter. The hills are denuded to a great extent, but on the slopes and in certain valleys there exists a fairly large number of the endemic Coco de mer palms which yield about 600 nuts per annum.

It is intended to create a settlement for the Colony's lepers on part of the Island, and the camp for the male lepers is near completion. The camp is situated on the coastal stretch facing Praslin. The leper camp has necessitated the construction of a new agricultural camp on a sufficiently remote part of the Island. The latter consists of a manager's house, copra drier, masonry store and pirogue shed. The manager, was permitted to assist in the supervision of the work at the leper camp for the Public Works Department. Practically all the timber required for the new leper camp was furnished by the Department. The number of bearing coconut trees it has so far been found necessary to remove to facilitate construction of the camp is about 200. The number of coconuts harvested during the year was 270,578, of this number 266,908 were converted into copra and 3,670 were issued as rations to labourers on the Island.

Mamelles Estate. This is an estate of about 45 acres situated near Victoria which was taken over by the Department in 1935. It produces cinnamon and coconuts. The number of nuts collected during the year was 2,728. The estate was thoroughly cleaned through and trees were planted.

the latter are shown under the report on Afforestation. In addition, plots of odder grasses, Japanese peppermint and *Ocimum sanctum* were established on open land and plots of *Centrosema* and *Calopogonium* were established as leguminous cover crops under coconuts. The policy with regard to this Estate depends on whether the present intention of making it the site of the proposed Government distillery is adhered to.

Long Island. The Island is reserved as a quarantine station under the charge of the Medical Department, its coconut plantations are under the supervision of the Agricultural Department and they have been leased for a number of years. As the Department was using the Island as a quarantine station for its imported livestock and a considerable amount of tree planting and other improvements were necessary it was decided not to renew the lease when the old lease expired at the end of August. The tree plantings effected before the close of the year are shown under the chapter concerning Afforestation. Considerable plantings of trees are still required to cover the hillsides, littoral, and particularly the hillside exposed to the South East monsoon.

(c) Reafforestation.

The end of 1937 marked the close of the three-year period for which the work of afforestation was financed by a free grant of £1,100 from the Colonial Development Fund. Summaries follow of (1) the numbers of plants issued to planters, (2) the numbers planted on the Crown Lands and acreage cleared and planted during the three years covered by the grant.

The grant has enabled the Department to plant long-abandoned and denuded areas with useful timber trees and to re-establish a zone of healthy growing trees on the high lands of the central massif. The work of restoring these lands to full fertility should be regarded as being in its infancy; a vigorous forest policy must be continued if the benefits of well managed forest reserves are to be reaped. Established forest has the capacity of being able to look after itself, but once its canopy is destroyed it becomes as a garden, which, if neglected, is speedily smothered with worthless weeds to the exclusion of anything of value. On the other hand, if cared for, commensurate returns can be relied upon.

Rounding off the work in the Morne Blanc—Exile area where a total acreage of 221½ acres has been cleared and planted, the year's working was devoted to clearing and planting on, and adjacent to, the Exile Estate. This work was carried up to the lower slopes of Morne Seychellois. The Exile Estate was acquired in 1935 and is situated on the Southern central spur of the mountain, and replanting the area with forest trees should exercise an important influence on general conditions in neighbouring and lower areas.

It is satisfactory to record that the work of the past three years has enabled most cultivable areas in the Niol watershed to be cleared and planted. This work must eventually have an important effect towards ensuring a regular supply of water, gradually percolating through to the supplying rivers in periods of prolonged drought. It will be noted that clearings and plantings were made during the year on Mamelle Estate, Long Island and Midlands Estate, Praslin. Planting operations were somewhat retarded by the dry weather which prevailed during the months of July, August and September.

The choice of trees has been largely decided by locality and experience as to the behaviour of the various introduced species. Most of the species may be regarded as quick growing trees, for example, *Albizia* has been largely planted owing to its quick growing and spreading habit, its surface-rooting soil-holding capacity; in fact that it is a leguminous tree and provides good mulch and mainly its role in acting as a nurse tree to more tender slower growing species.

It must be borne in mind that the first task after clearing lands, so long denuded, is soil restoration and the provision of a soil protecting canopy. This has been aimed at and the logical following up of this initial work should be subsequent thinning of the fast growing trees and the planting of the better class timber trees. Needless to say during the initial clearing, the few existing endemic trees and shrubs were left.

The trees in all newly planted areas are making good growth and are remarkably free from insect pests and diseases. These areas were kept well weeded

mulched and supplied. Some species of Eucalyptus and the Albizzia have made exceptional growth, while the adaptability of Santol should commend this species to all interested in tree planting. It is regretted that the value of these areas as an object lesson to the planting community is at a discount, owing to their inconvenient situations.

Continuation of this developmental work apart from the careful tending of the newly planted areas should be as follows :— (1) The freeing of the trees and shrubs from fern and weed growth in those areas deemed as secondary in importance and plantings made where possible. This work to extend gradually through all of the Crown Lands.

(2) The thinning and disposal of Cinnamon in certain areas at the lower elevations.

(3) Extension of plantings on the Midlands Estate, Long Island and on the Delanos Terrain Turpin ridge.

(4) Widening and creation of new fire barriers on the Crown Lands. The above may be regarded as bare essentials which the Colony should be able to afford.

At the end of the year the Government appointed an officer to report on the forests of the Colony and to submit recommendations concerning the desirability of establishing Mountain Reserve Lines, and the policy to be adopted with regard to the conservation of the forests.

Under Ordinances Nos. 11 of 1903 and 20 of 1917 the cutting of all trees, in river reserves, and breadfruit and jakfruit trees outside the river reserves, is subject to the approval of the Department. Two Forest Rangers spend most of their time investigating requests for cutting trees under the above mentioned Ordinances. The value of these measures to the Colony cannot be too highly emphasised.

The following number of permits were issued under these Ordinances during the year :—

Permits to cut trees in river reserves	...	168
" breadfruit trees	...	250
" jakfruit trees	...	63
		481

In the majority of applications the numbers of trees asked for were drastically reduced, and 23 applications, mainly connected with the river reserves, were totally refused.

The following quantities of timber were exploited on Crown Lands and supplied to the Public Works Department during the year :—

7,957	feet	Capucin posts
1,727	"	" madriers
4,223	"	Bois rouge posts
155	"	Eucalyptus posts
923	"	Cedar posts
3,747	"	Eucalyptus planks
988	"	Agati planks
592		Rafters.

Tree seedlings issued to planters.

<i>N a m e s.</i>	<i>1935</i>	<i>1936</i>	<i>1937</i>
—	—	—	—
Acacia mimosa	685	265	100
Adenanthera pavonina (Agati)	12	14	100
Azzeria bijuga (Gayac)	...	35	12
Albizzia lebbek (Bois noir)	114	...	...
„ moluccana	1,042	3,745	3,050
Artocarpus integrifolia (Jak)	293	112	200
Calophyllum inophyllum (Takamaka)	363	...	...
„ parviflorum (Takamaka Madagascar)	514	538	40
Casuarina equisetifolia (Cedar)	44,631	32,361	600
Chlorophora excelsa (Mvuli)	...	50	...
Cola acuminata (Cola)	...	825	...
Eucalyptus albens	...	320	...
„ (local var).	50	...	1,339
„ robusta	188	1,610	3,848
„ rostrata	...	337	514
Heritiera littoralis (Bois de table)	70	34	...
Melia azederach (Lilas)	121	42	...
Pterocarpus indicus (Sangdragon)	190	11	200
Tectona grandis (Teak)	21	63	13
Terminalia catappa (Badamier)	10	...	...
Sandoricum indicum (Santol)	1,495	51	100
Wormia ferruginea (Bois rouge)	...	7	...
Total...	49,799	40,420	10,116

Numbers of trees and acreage planted.

<i>MORNE BLANC.</i>	<i>1935</i>	<i>1936</i>	<i>1937</i>
—	—	—	—
<i>Names of trees</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
—	—	—	—
Acacia mimosa	6,959	1,500	637
Albizzia moluccana	8,170	1,600	224
Azzeria bijuga (Gayac)	...	150	...
Adenanthera pavonina (Agati)	275	...	...
Artocarpus integrifolia (Jak)	450	...	...
Chlorophora excelsa (Mvuli)	1,846	...	...
Calophyllum parviflorum (Takamaka de Madagascar)	1,910	...	...
Casuarina equisetifolia (Cedar)	...	5,505	2,909
Cinnamomum zeylanicum (Cinnamon)	...	2,484	...
Chloroxylon swietenia (Satin wood)	...	...	770
Eucalyptus citriodora	...	4,100	...
„ Local var.	245	...	2,548
„ robusta	1,461	...	...
„ rostrata	...	...	1,923
„ Staigeriana	...	1,788	...
„ viminalis	...	420	...
Heritiera littoralis (Bois de table)	...	500	...
Pterocarpus indicus (Sangdragon)	...	302	...
Sandoricum indicum (Santol)	625	...	...
Shaya madagascariensis	1,200	...	...
Tectona grandis (Teak)	670	...	...
Total...	23,811	18,349	9,011
Acreage planted...	122	50	49½

<i>NIOI.</i>	1935	1936	1937
<i>Albizzia moluccana</i>	2,990	1,500	300
<i>Adenanthera pavonina</i> (Agati)	1,170	...	...
<i>Artocarpus integrifolia</i> (Jak)	2,315	...	...
<i>Acacia mimosa</i>	11,850	...	...
<i>Eucalyptus citriodora</i>	4,940	900	...
" local var.	...	...	3,300
" robusta	1,780	...	...
" rostrata	...	...	900
<i>Calophyllum parviflorum</i> (Takamaka de Madagascar)	600	...	...
<i>Chlorophora excelsa</i> (Mvuli)	700	...	...
<i>Casuarina equisetifolia</i> (Cedar)	...	2,805	1,600
<i>Cinnamomum zeylanicum</i> (Cinnamon)	...	1,800	...
<i>Pterocarpus indicus</i> (Sangdragon)	2,934	...	...
<i>Terminalia catappa</i> (Badamier)	664	...	...
<i>Sandoricum indicum</i> (Santol)	2,260	...	...
<i>Kha a madagascariensis</i>	100	...	...
<i>Heritiera littoralis</i> (Bois de table)	380	...	...
<i>Tectona grandis</i> (Teak)	100	...	...
<i>Melia azederaca</i> (Lilas)	120	...	...
<i>Eugenia caryophyllata</i> (Clove)	128	...	...
Total ...	33,031	7,005	6,100
Acreage planted ...	145	21 $\frac{3}{4}$	36 $\frac{1}{2}$

HERMITAGE.

<i>HERMITAGE.</i>	1936	1937
<i>Names of Trees</i>	<i>Number</i>	<i>Number</i>
Areca	319	...
Casuarina equisetifolia (Cedar)	506	...
Calophyllum parviflorum (Iakamaka de Madagascar)	139	...
Eucalyptus citriodora	135	...
Eugenia caryophyllata (Clove)	181	...
Lodoicea sechellarum (Coco de mer)	18	...
Sandoricum indicum (Santol)	145	...
Total...	1,443	...
Acreage planted...	5 $\frac{3}{4}$	...

MAMELLE ESTATE.

Albizzia moluccana	...	400
Eucalyptus local var.	...	2,800
Total...	...	3,200
Acreage planted...	...	13

MIDLANDS ESTATE, PRASLIN.

Albizzia moluccana	...	...	1,130
Eucalyptus local var.	...	...	400
„ robusta	...	...	857
„ rostrata	...	...	383
„ viminalis	...	...	225
Total...	...	...	2,995
Acreage planted...	...	...	20

LONG ISLAND.

<i>Albizzia moluccana</i>	...	200
<i>Calophyllum inophyllum</i> (Takamaka)	...	290
<i>Casuarina equisetifolia</i> (Cedar)	...	968
<i>Eucalyptus</i> local var.	...	230
<i>Pithecolobium saman</i> (Rain tree)	...	150
Total...	...	1,838
Acreage planted...	...	5

The total area planted under the scheme is $468\frac{1}{2}$ acres.

(d) *Field experiments and demonstration plots.*

Nutmeg and Coffee. The Nutmeg trees have grown well and some of them have now attained heights of about 10 feet. During the month of April each plant was given an application of $1\frac{1}{2}$ pounds of a mixed fertiliser containing Sulphate of Ammonia, Sulphate of Potash and Guano in approximately the following proportions by weight :- Sulphate of Ammonia 60%, Sulphate of Potash 20% and Guano 20%.

The Robusta Coffee trees which have been maintained as an intercrop, and which were topped at a height of about 6 feet in 1936, have spread considerably and will have to be pruned after the present crop has been harvested.

A good crop of berries was collected during the period May to September, yielding about 200 kilos of dry beans per acre. The trees flowered again in October and a good crop of young berries has set. Each Coffee tree received half pound of a mixed fertiliser, (same as that applied to the Nutmeg trees).

The whole plot was heavily mulched with leaves and with the trimmings from the *Gliricidia* trees which have been used as shade in the plot. The *Gliricidia* is a leguminous plant which grows readily from cuttings and is excellent for providing light shade for young plants and such crops as Pateboui. *Gliricidia* deserves attention on most properties as it is also a useful cattle fodder. It can be propagated rapidly and pruned frequently without ill effects to the tree.

Eucalyptus citriodora and Eucalyptus staigeriana.

E. citriodora. The trees in this plot were not cropped during the year and they have made good growth, attaining a height of about 35 feet in 18 months since the time of last cropping. The plot was mulched, and in the months of March and October applications of mixed fertiliser (same as in Nutmeg plot above) were made to each tree, the rate of application was about 200 kilos per acre per annum. It was not possible to maintain Lemongrass as an intercalary crop as the shade produced by the *Eucalyptus* trees was too dense. Its use as a profitable intercrop and soil cover in new plantings of *Eucalyptus* is to be recommended.

E. staigeriana. The trees in this plot were cropped in January. The majority of the trees were cropped at a height of about 4 feet from the ground, but a few trees were cropped at ground level as a trial. They have all coppiced well and the trees cut close to the ground have produced 3 or 4 strong shoots. 53 trees were cropped and they yielded 121 kilos leaves and 147 kilos stems and twigs, thus giving a yield of about 2,100 kilos green leaves per acre for one cropping. Ten of these trees had been cropped four months and the remainder about nine months previously.

The yield of oil from this cropping was 50 litres per ton of green leaf. Palmar grass was maintained as an intercalary crop. Applications of fertilisers were made in the months of March and October at the rate of about 200 kilos per acre per annum.

When *E. staigeriana* and *E. citriodora* are cropped, they both coppice well, the former usually produces three to five strong shoots, whereas the latter usually produces one to three shoots. The *E. staigeriana* trees have a bushy habit of growth and consequently lend themselves readily to cropping. The tree grows well at the Botanical Gardens on a red loamy soil, and on a poor granitic sandy soil at low elevations.

Eucalyptus citriodora interplanted with *Derris elliptica* and *D. malaccensis*. The *Eucalyptus* trees have now attained a height of 40 - 50 feet. Growth has been satisfactory and a few of the trees fruited during the year. The *Derris* plants were heavily pruned for planting material during the first half of the year. The *Derris* has grown well under the shade of the *Eucalyptus* and has made an excellent ground cover.

Citrus. Plot A. The growth of the trees in this plot has been satisfactory. Most of the grapefruit and orange trees flowered heavily during the first half of September, but a severe dry spell at the end of September caused the shedding of a large proportion of the flowers and young fruits.

The Eureka lemon trees flowered several times during the year and set a fair quantity of fruit. The quality of the first fruits from these trees has been satisfactory and appear to be true to type. The leguminous cover crops, *Indigofera endecaphylla* and *Centrosema* spp. started last year have covered the orchard rows effectively and have reduced weeding to a minimum. Three pounds of the mixed fertiliser (as used in the Nutmeg plot above) were applied to each tree in March and two pounds of Sulphate of Ammonia were applied to each tree in August. The heaviest flowering season is usually September to October, depending chiefly on the rainfall, and it is advisable to give a good application of a nitrogenous fertiliser about 4 to 6 weeks before this period, in order to stimulate the production of new growth and flowers. The trees were sprayed with 2 per cent. agrisol, at intervals, to control rust mites, soft scales and *Aphis* spp.

Plot B. The citrus trees in this plot have made satisfactory growth and Villa Franca lemon plant set several fruit. The leguminous cover crops *Indigofera endecaphylla*, *Pueraria phaseoloides* and *Calopogonium mucunoides* have formed a thick carpet on the orchard rows and have obviated the necessity for weeding. The last mentioned produced a good crop of seed and died off in the dry weather in July and August. However, a thick layer of humus was left on the soil and the seeds lying on the ground germinated with the first rains in September and the new plants soon re-covered the soil. The sour orange stocks planted in the beds between the orchard rows were budded during the year.

Excelsa Coffee. The growth of these trees has been good, the *Gliricidia* has been kept to provide light shade for the Coffee trees. The attack of green scale (*Lecanium viride*) mentioned in last year's report cleared up in a remarkable manner without spraying, after the predator *Exochomus ventralis* had been liberated in this plot.

E. staigeriana. This plot has an area of about one-seventh of an acre, it was planted in July 1936 and cropped in August 1937. The growth of these plants during the first six months was poor and at the time of cropping the trees were irregular in size. The trees were cut at different heights from the ground, varying from 6 inches to 3 feet. All the plants cut low have grown back regularly and well, but the ones which were left with a greater length of stem have grown more vigorously. This, however, cannot be considered as conclusive evidence that high cutting is preferable, because in another plot cutting at ground level proved just as good or better than high cutting. A good deal of experimenting still has to be done to decide on the optimum height for cutting. The cropped material from this plot was about 121 kilos green leaf which yielded about $5\frac{1}{2}$ litres oil, i.e., about 45 litres per ton.

Ylang Ylang (Cananga odorata). This plot of one-third acre was started last year and the trees have grown rapidly. In November the trees were topped at a height of about 6 feet from the ground to facilitate collection of the flowers and to cause low spreading of the trees. Half of the plot was intercropped with *Ocimum sanctum* and *O. americanum*. The other half of the plot was cover-cropped with Cascavel (*Crotalaria anagyroides*).

Derris. This plot has an area of about one-eighth acre. It was planted in July 1936 - half the area in *Derris malaccensis* and half in *D. elliptica*. Both varieties have grown vigorously in the open and this demonstrates the fact that *Derris* will thrive on poor sandy soils either with or without shade.

Cinnamon. This plot which consists of about one-fourth acre was planted in August 1936 in order to provide some information relating to this crop's manurial requirements. The majority of the plants are now 4 feet high, but there is one portion of the plot which is gravelly and in which the Cinnamon plants have not made good growth. The plot was cover-cropped with horse bean or Gros Pois (*Canavalia ensiformis*) and each of the plants received $\frac{1}{2}$ pound of a mixed fertiliser (as used in the Nutmeg plot above).

Plants of a selected strain of *Derris elliptica* were received from the East African Agricultural Research Station at Amani. These have been successfully established in a nursery bed and will be extended as soon as planting material becomes available.

Plots of the following plants were also maintained :- Japanese peppermint (*Mentha arvensis*), Patchouli, *Ocimum sanctum* Linn., *O. americanum* L., Tous les mois (*Canna*), selected varieties of local sweet potatoes, several varieties of Lima beans, Millet (*Sorghum* spp.) and fodder grasses.

(e) *Plant propagation and Nursery work.*

The following table gives the distribution of economic plants and seeds during the years 1934 - 1937.

Names	1934	1935	1936	1937	Total
Eucalyptus citriodora	41,797	63,580	66,265	2,397	174,039
" staigeriana	9	...	4,740	14,675	19,424
Robusta coffee ...	8,917	13,189	6,155	4,860	33,121
Excelsa coffee ...	340	2,567	475	25	3,407
Areca nut palms ...	1,009	9,624	267	2	10,902
Allspice seedlings ...	136	10	419	...	565
Pepper cuttings ...	253	80	10	139	482
Citrus budded ...	39	35	...	225	299
Palmarosa clumps ...	5,387	9,142	1,465	40	16,034
Lemongrass " ...	2,340	5,076	...	...	7,416
Nutmeg seedlings ...	364	2	...	...	366
Onion " ...	1,555	550	...	...	2,105
Coconut " ...	55	100	2	...	157
Coco de mer nuts ...	242	...	...	...	242
Cardamoms ...	120	50	96	...	266
Cacao seedlings ...	64	...	...	...	64
Clove " ...	43	75	24	...	142
Gliricidia cuttings ...	160	...	...	...	160
Mangoes grafted ...	4	4	...	4	12
Pineapple suckers ...	...	450	...	...	450
Vanilla cuttings ...	...	50	...	1,395	1,445
Cinnamon seedlings ..	...	1,646	14,866	9,734	26,246
Derris elliptica ...	...	...	1,410	1,087	2,497
" malaccensis ...	...	200	4,160	3,937	8,297
Cover crop cuttings ..	...	...	...	700	700
Tobacco seedlings ...	...	2,506	...	...	2,506
Fodder grass clumps.	...	...	70	308	378
Patchouli cuttings ...	...	...	2,200	...	2,200
Litchi layers ...	...	...	...	1	1
Avocado pear ...	...	...	...	6	6
Peppermint cuttings.	...	...	...	535	535
Canna rhizomes ...	...	...	...	30	30
Total :-	62,834	108,936	102,624	40,100	314,494

no. 19

The development of this important service has been due to the recommendations of the Agricultural Adviser to the Colonial Office, who visited Seychelles during 1931. The Colony's chief economic hope for the future depends upon the diversification of its agricultural industries and the discovery of new crops suitable to the climate and soils of the Colony, and to the aptitude of its people.

A main line of development was the Colony's essential oil industry and generous assistance has been afforded by the Home Government by a series of grants designed to assist towards this end. These grants have financed the following :-

- (1) An experimental distillery.
- (2) A fully equipped laboratory.
- (3) The services of an expert distiller for one year (1932).
- (4) A grant covering a period of three years for the provision of free plants to planters. This grant provided for the years 1935, 1936 and 1937.

The Department's duty has been to find suitable plants and to thoroughly test out the possibilities of these plants in the field, in the distillery, in the laboratory and the market. The subsequent duty was the furnishing of supplies to the planter and finally to smooth over the difficulties concerned with the marketing of new products.

With regard to the provision of new plants to supplement the distilling industry, the Department can with modesty claim notable success.

The Colony's 'mélange' of Citronellas has been sorted out and the one type found to be true has been ascertained. The high quality of the Colony's Lemon-grass has been proved. The prevailing mixture of Palmarosa and Gingergrass has been sorted out and introduction made of a Palmarosa of a quality unequalled on the world's market.

The Department can claim to have discovered and tested the excellent possibilities for the Colony of Japanese Peppermint (*Mentha arvensis*). The economic values of each of the 7 types of *Ocimum* has been elucidated. Lastly, but not least, the possibilities of *Eucalyptus citriodora* and *E. staigeriana* have been given exhaustive trial with the result that new uses for these oils have been found with encouraging prospects of sale at remunerative prices.

In the last departmental report it was pointed out that the establishment of these new crops depended largely on the overcoming of two obstructive factors. Firstly, local conservatism; secondly, a natural reluctance to plant until the means required to prepare and market new products were fully assured. The first factor is one of difficulty owing to the capital necessary to enable a willing planter to establish new cultivations. To find the necessary land would probably mean that certain areas under Cinnamon would need to be sacrificed along with areas where coconuts produce a minimum crop. Although by comparison with the crops recommended, the returns from cinnamon and coconuts of low production are negligible, coconuts and cinnamon hardly entail cultivation costs. The collecting of nuts and cinnamon require little supervision, and cheap labour assures a modest profit. In times of low prices abandonment of these areas causes a loss of crop but the system involves an insidious decline of effort, production, and profit. The system is really upheld by natural circumstances, but principally by low labour and cultivation costs. It is as unsound and indeed dangerous to place reliance on the possibility of labour always remaining cheap, as it is to depend on the continuance of the cinnamon Leaf oil industry. The second factor, that is, the means of preparing and marketing the crop is a real obstacle which the Government is endeavouring to overcome. A properly equipped distilling plant, which is beyond the means of the average planter, is necessary to produce the oils. A scheme has been submitted for a Government distillery designed to distil the new oils produced and to control the marketing of standardised oils on a co-operative basis. An application for the amount required to finance this scheme will be made to the Colonial Development Fund Committee.

The provision of a distillery should remove the last-mentioned obstacle towards the establishment of the essential oil industry on a sure and sound basis and provide the best insurance for the Colony's agricultural and social future.

From an insignificant start made in 1932 the plant distribution service shows the development made since that time. As stated above, the service was financed

y a Colonial Development Fund Grant of £1,000 spread over a three-year period which expired at the end of the year under review. The Grant enabled small Nurseries to be established in the out-districts, viz., South Mahé, Praslin and La Digue. With the cessation of the Grant the Department has been compelled to close down its Nursery at South Mahe and to somewhat curtail its work in other nurseries. Every effort will be made, however, to maintain the standard of output in the Nurseries at departmental headquarters and at Praslin and La Digue.

The distribution of plants for the year shows a falling off, which is chiefly explained by the reasons given above. The scheme for a new Government distillery includes a generous plan of distribution.

For the first time planters have been able to obtain budded plants of commercial varieties of orange, grapefruit and lemons in some quantity from the Department's Nurseries. At the close of the year considerable numbers of well grown plants were available in the Department's Nurseries.

The possibility of developing an export of citrus fruit is overshadowed by the presence of citrus canker (*Pseudomonas citri*) of which mention was made in the Department's Annual reports for 1932 and 1933. The disease, once established in country, can only be eradicated by the complete destruction of infected plants.

(f) *Livestock.*

A bull, three cows and two calves of the Scindh breed were received in April from India. These animals were sent by a recent settler in the Colony who offered the bull to the Department in return for its care of all the animals during their period of six months' quarantine at Long Island. The Government willingly accepted this generous offer.

The introduction of this Indian breed of cattle should make a useful addition to the Colony's livestock.

With the kind assistance of the Agricultural authorities in Kenya, the Department imported a grade Jersey heifer and two Masai ewes. These animals arrived in the Colony on 25th May and they spent a quarantine period of six months at Long Island. A Large Black boar and a Berkshire boar were ordered from Kenya at the same time as the above-mentioned animals, but it was not found possible to procure them. The Kenya Agricultural Department has kindly promised to ship the pigs as soon as they become available.

The following animals were born during the year :- Two Freisian bull calves, one grade Jersey bull calf, one Masai ram, one black headed Persian ewe and ten Large Black X Large White pigs.

An auction sale was held at the end of April and a young Freisian bull and five young Large Black X Large White pigs were sold. The pigs were about two months old at the time of the sale and the demand for them was good, the price per head varying from Rs 8 - Rs 14.

The Department's Freisian bulls stationed at Anse à la Mouche, Praslin and La Digue have been well cared for, and the Department much appreciates the help rendered by the estate owners, who have so kindly taken charge of these animals.

The cattle of the Colony are much in need of improvement. It is obvious that the present stock has degenerated both in size and virility. This state of affairs has been largely brought about by the absence of a breeding policy. The stock now contains a large preponderance of European breeds and the type evolved is neither hardy nor thrifty enough for the ranching conditions under which the animals live. Cattle owners should make more use of the Department's recently imported sires. In conjunction with the use of the Department's sires, there should be systematic castration of inferior males.

The present position calls for expert veterinary investigation into the whole of our livestock problems, and advice as to future policy.

(g) *Laboratory and distillation investigations.*

Analyses of essential oils for export.

Patchouli. Thirty three consignments of oil were tested prior to exportation. Two of these consignments belonging to different shippers were rejected owing to the impure character of the oil.

Analyses of oils for experimental purposes.

Cinnamon Bark oil	4
Cinnamon Leaf oil	1
Patchouli oil	4
Total 9.	

Analyses of oils for competition at the Agricultural Exhibition.

Lemongrass oil	2
Cinnamon Leaf oil	15
Clove oil	2
Patchouli oil	9
Eucalyptus citriodora	4
Total 32.	

Fermentations analysed for the Excise Department.

Bacca	28
Toddy	28
La Purée	103
Wine	1
Rum for % of alcohol only	6
Total 166.	

For the Court and private individuals.

La Purée	1
Toddy	2
Toddy	4
Total 7.	

Samples of common salt analysed for magnesia.

2.

Work in the experimental distillery. The table below summarises the number of distillations made of material from essential oil yielding plants. The objects of distillation were to ascertain yields, etc., and to secure samples for investigation and exhibition.

<i>Plants.</i>	<i>Fresh material.</i>	<i>Dry material.</i>	<i>Total.</i>
Peppermint	2	1	3
Eucalyptus citriodora	3	1	4
" staigeriana	8	...	8
Palmarosa ordinary	1	...	1
" Indian var.	4	...	4
Patchouli	...	4	4
Ocimum No 5	4	...	4
Cinnamon bark (small stems)	...	5	5
" " (thick stems)	...	2	2
Citronella No 5	2	...	2
Ylang Ylang flowers	1	...	1
Allspice	...	1	1

(h) *Entomology.*

The coconut scale problem has continued to occupy the attention of the Entomologist throughout 1937.

The following is Mr D. Vesey-Fitzgerald's report :-

Scale incidence on coconuts growing in the main different types of country, expressed as the percentage of the total leaves attacked is given in the following table. All trees sampled were mature. Their state of vigour as indicated by their bearing capacity is also given for each locality, thus affording an interesting correlation with the corresponding scale incidence.

Type of country.	% of leaves attacked by scales.				Yield. Nuts/Tree.		
	Ischnaspis.	Lecanium.	Pinnaspis.	Chrysomphalus.	Max.	Avg.	Min.
Coastal plateaux	89	77	8	60	74	14	0
Coastal slopes	80	80	-	51	84	16.5	0
Hillsides	89	60	28	48	52	13.7	0
Ridges	79	2	1	8	3	0.8	0

The following points arising from the above table need emphasis.

(a) *Ischnaspis longirostris*, the "Filon noir" remains the prevalent scale throughout the plantations of Mahé. The attack is of a chronic nature, resulting in a general weakening of the tree, the older leaves of which become rather olive green in colour.

(b) The incidence of *Lecanium tessellatum*, the "Bernique rouge" is directly correlated with the vigour of the tree as expressed by nut production, i.e., vigorous trees on plateau soils show a high incidence whilst on poor trees situated on mountain ridges the attack is almost nil. The attack is of a chronic nature, resulting in an unsightly and weakening growth of "sooty mould".

(c) *Pinnaspis buxi*, the "Bernique jaune" is of negligible importance except on hillsides, frequently the worst incidence being on elevations above 500 feet where conditions are, for other reasons, not suitable for coconut cultivation. The attack is of an acute nature, causing, while it lasts, extensive burning of all but the heart leaves and a severe reduction of crop.

(d) *Chrysomphalus ficus*, the "Bernique noire" remains widespread but is only occasionally serious. The attack is of an acute nature and when severe, causes serious burning of the lower leaves and a reduction of crop.

Scale incidence on the other Islands may be summarised as follows :-

(a) Granitic islands. There is a general tendency for scale attack to resemble that of Mahé, but on some of the smaller, drier and more isolated ones the incidence is not so advanced.

(b) On Sand cay Islands and the marine sand plateaux of some of the granitic islands scale attack is in general not serious, the species represented being *Lecanium* and *Chrysomphalus*. The worst consequences result from the occasionally extensive development of "sooty mould".

(c) The Aldabra group of Islands. Coconuts suffer severely from drought on these Islands and are for this reason unthrifty. The attack of *Chionaspis inday* is at times severe.

Scale incidence on other economic plants has remained high throughout the year, and it has been found necessary to consider these in conjunction with the work on coconut scales. The species represented are awaiting determination.

The only feasible remedy for these scales being biological control, work has been confined to the breeding and distribution of the Tanganyikan Coccinellid predators recorded in the 1936 report.

Chilocorus distigma. 24,352 beetles of this species have been distributed to 36 districts on eight different Islands. Every colony, which has been subsequently visited, has been found to have become established. With unvarying regularity the "Distigma beetle" has become general on coconut trees six months after liberation. A locality where these beetles have been at work one year has been nearly cleaned of the *Ischnaspis* scale.

Chilocorus wahlbergi. This species has not bred freely and since its work is eclipsed by the "Distigma beetle" no breeding programme has been undertaken with this species. The "Wahlbergi beetle" is however firmly established on Cerf Island where it is common.

Exochomus ventralis. 3,416 beetles of this species have been distributed to 16 districts on six different Islands. Every colony, which has been subsequently visited, has been found to have become established. The breeding work on this species has been badly handicapped by the ant *Technomyrmex*, but in spite of this set back, these beetles are locally abundant on coconuts and they have also cleaned various fruit trees of Lecaniid scales. The destruction of this type of scale results in the clean up of "sooty mould" on the trees. Some of the work of this beetle is, however, masked by the continuance of "wax scales," (*Vinsonia* and *Ceroplastes*) and of "Pou blanc", (*Icerya seychellarum*) to cause the growth of "sooty mould", since these Coccidae are not attacked by the *Exochomus* beetle.

Exochomus flavipes. This beetle was discovered on the Islands of Cosmoledo, Assumption and Aldabra feeding on Lecaniid scales on wild plants. The species has been introduced to Mahé where it has become established.

Technomyrmex detorquens, the "Fourmi noire", by far the most abundant species of ant in the Colony at the present time has proved to be the chief limiting factor to the spread of the predaceous beetles. This ant is prevalent throughout the granitic Islands but is normally absent from the flat Islands where its place is taken by the "Fourmi rouge", *Pheidole picata*.

A bulletin on this ant has been published and the following is a summary of the conclusions and recommendations contained therein :-

(a) The ant is a recent introduction to Seychelles, the first published record of its appearance being subsequent to 1912.

(b) The ant, under Seychelles conditions, is able to maintain its colonies in trees without communication with the ground, any loose bark, dead leaves or other shelters such as the crown of a coconut tree providing suitable places for the development of a colony.

(c) The food of this ant is varied, meaty matter such as fish and dead or injured insects being consumed as well as sugary matter such as "honey-dew" from Coccidae and syrups. The latter is most acceptable to the ants during periods of drought.

(d) The relationship between the scales on one hand and the predators on the other with the ant is indirect and chiefly dependent on the great number of ants present.

Predaceous beetles vacate vicinities where the ants are abundant but the latter have not been proved to destroy the eggs or larvae of the former.

(e) The usual ant remedies are of little avail against this species. For reason (b) above, bands are useless, and for reason (c) poison baits have very limited application.

(f) Estate sanitation appears to be the most promising way of turning the balance in favour of the predators. Close planting, piles of decaying rubbish, dead leaves and branches, loose bark, and cobwebs, etc., should all be avoided or destroyed.

Under sanitary conditions the predators will bring about a progressive reduction of scales which will be followed by a reduction of "sooty mould", and, as the trees become healthier it is probable that the ants will become less numerous.

Minor pests noticed during the year and determined by the Imperial Institute of Entomology include :-

The Noctuid, *Symitha mangifera* Tams, the caterpillar of which was found spinning together and feeding on the young leaves of mango in Mahé.

The Pyralid, *Crocidolomia binotalis* Z., the caterpillar of which defoliates garden vegetables in Mahé. The "Mouche jaune", *Polistes* sp., is a good predator on these caterpillars and therefore the nests of these wasps should not be destroyed on sight.

The Pyralid, *Etiella behri* Zell., the caterpillars of which feed in the pod of pigeon pea, a crop which it is impossible to grow in Seychelles for this reason.

The Pyralid, *Sylepta derogata* F., the caterpillars of which roll up and feed on the leaves of "Ochra" in Mahé. If the attack is severe the rolled leaves should be collected and destroyed.

The Delphacid, *Stenocranus* sp., a small sucking insect rather abundant on coconut leaves at Alphonse Island. This insect is not however at all serious.

The following publication has been issued :-

Notes on the "Fourmi noire" (*Technomyrmex albipes*.)

(i) *Agricultural instruction and visits to Estates.*

Pupils. Early in the year it was decided to select 3 pupils for training in the Agricultural Department for a period of two years. In January the public was informed to this effect and candidates were asked to attend an examination for the purpose of selecting the pupils. Eleven boys presented themselves for examination - seven were ex pupils of St Louis College and four from Primary Schools. The three boys selected were about 17 years of age.

Theoretical Course. The Assistant Director gave a course of lectures which included :- The composition of soils, as affecting the agriculturist; manuring; drainage; propagation of plants; seed storage and cultivation of crops, with particular reference to local conditions. All lecture notes were examined and corrected periodically.

Practical Course. The pupils assisted in all the important operations carried out at the Station. They had the opportunity of learning how to propagate and cultivate a wide range of crops and how to care animals.

In general the pupils showed a keen interest in their work. They find difficulty in expressing themselves in English but they are improving in this direction. With this training a good future should await these boys both on Estates and in the Agricultural Department.

Visits to Estates. The Senior Officers of the Department carried out an extensive programme of visits to Estates, particular attention being given to those Estates engaged in the planting of new crops issued by the Department.

The valuation of 44 Estates on behalf of the Land Bank in Mahé, Praslin and La Digue, carried out by the Director and the Assistant Director brought the Department into intimate contact with the would-be borrower and his varied

problems, on which advice was given. The agricultural conditions of the loans, such as the planting up of cover crops, etc., will necessitate an increased travelling programme and adds further to departmental responsibilities.

The Director, accompanied by the Entomologist, made an extensive tour of the Outlying Islands. The tour lasted from the 15th September until the 12th November, and the distance covered on a direct course from Island to Island was calculated as being 1,600 sea miles.

The total number of Islands (large and small) visited was 36. Visits were made to 13 main island group settlements and nights were spent on 17 different Islands.

The atolls and Islands visited included Marie Louise, Alphonse, Farquhar, St Pierre, Providence, Astove, Cosmoledo, Assumption, Aldabra, Des Roches, Daros, Poivre, Remire and African Banks.

The principal reasons for the Entomologist's visit were to study (1) the incidence of scale insects on the Islands with the view to establishing biological control, (2) insect life generally, (3) bird life with a view to submitting recommendations for a revision of protective measures for the birds and their eggs. Reports on the above were duly submitted on return.

(j) *Agricultural Bank.*

As mentioned in an earlier Chapter an event of importance to the Colony was the successful launching of an Agricultural Bank, its operation being authorised by Ordinance No 1 of 1937 of the 8th March 1937.

The importance of this measure towards the help of agriculture in this Colony, where the average interest rates varied between 8 and 12 per cent, cannot be overestimated. The reason for such high rates was principally due to the Colony being without a Bank. The serious decline in prices which set in at the end of 1930 made extrication a difficult matter, and, in consequence, the condition of the mortgaged estates rapidly deteriorated and reflected the abject plight of their owners.

The Bank is organised on a self supporting basis, and it is hoped that by borrowing for 40 years and lending for a maximum period of 20 years, the reinvestment of the annual repayments of capital and interest may at the end of the 30 year period leave the Bank with sufficient capital of its own to continue operations.

Authority was obtained to borrow money up to a total amount of £40,000 through the Crown Agents. Initial borrowings were made at the rate of $3\frac{1}{2}$ per cent.

The first loans were made on the 13th July 1937. With the borrowing rate of $3\frac{1}{2}$ per cent the Bank is able to charge interest at rates varying between $4\frac{1}{4}$ and 5 per cent. Loans are made for 5 - 10 - 15 and 20 years. The repayment of interest and capital is by equated quarterly instalments. The rate of interest in the case of loans for 5 years is $4\frac{1}{4}$ per cent, 10 years $4\frac{1}{2}$ per cent, 15 years $4\frac{3}{4}$ per cent and 20 years 5 per cent.

The number of loans made during the year was 29. The total amount loaned was Rs 305,550. The number of estates valued and examined by the Department was 44.

(k) *Agricultural Board.*

Four meetings of the Board were held.

The Director gave 2 addresses, which covered the Department's activities. In February the Entomologist addressed the Board and gave a resumé of his first year's work, which included his visit to East Africa and the commencement of the breeding work on the predators introduced into the Colony.

The question of copra inspection was carefully considered and discussion on this subject took place at all the meetings held during the year. The action taken, at the Board's suggestion, is recorded earlier in the report in the section dealing with the coconut industry. Several important matters were discussed and these included the organisation of the local Agricultural and Industrial Exhibition; the

"Produce Export Ordinance", for regulating the export of agricultural and fishery products; the amendment of the Licensable Produce Ordinance; the burning of hillside lands at Praslin and the importation of animals.

The members of the Board functioned as the Central Committee for the Agricultural and Industrial Exhibition. They rendered assistance in the organisation of the show and they served as judges of exhibits.

(1) *Agricultural Exhibition.*

The Exhibition, was held in the Carnegie Hall and Gordon Square on 1st and 2nd September.

There were 267 exhibitors and 1,486 exhibits (last year the respective numbers were 155 and 614). The space available in the Carnegie Hall was inadequate for the number of exhibits, and in consequence, it is hoped to obtain space for future Exhibitions in the School buildings adjacent to the Gordon Square.

The Arts and Crafts sections again attained a high standard and it was very pleasing to note the improvement in number and quality of exhibits in the Fruit, Vegetables and prepared food classes.

The Livestock section still left a good deal to be desired, although, compared with last year's Show, there was a marked increase in the number of exhibits in the Poultry section. The Department arranged a stall in which were exhibited essential oils and food crops suitable and desirable for production in the Colony. The Entomologist also arranged an exhibit, which demonstrated the habits of the predators, *Chilocorus distigma* and *Exochomus ventralis*, which he had introduced from Africa.

The gate attendance was good. There were 390 visitors on the first day and nearly 1,000, which included about 400 children, on the second day.

The prize money distributed amounted to Rs 1,146. Besides this sum 22 valuable special prizes were awarded by private persons.

(m) *Plant Importation and Exchange.*

Thirty one separate consignments of seeds and plants were received from overseas, and these include economic plants, seeds of timber trees, vegetables and decorative plants.

The undermentioned seeds and plants were presented to the Department and are gratefully acknowledged :

Material.

Received from.

Bulbs of water lilies

Royal Botanic Gardens, Kew.

Seeds of *Musa textilis* and plants of *Derris*.

East African Agricultural Research Station, Amani.

" Lima beans

Department of Agriculture, Tanganyika.

" Avocado pears

" Zanzibar.

" Coffee

" Uganda.

" Palms

" Jamaica.

" Lima beans

Economic Botanist, Burma.

" timber trees and decorative plants

Forestry Department.

Dehra Dun, India.

" Rain tree

Mr H. Dauban, Mahé, Seychelles.

" Palms

Brother Leon, Collegia de la Salle, Cuba.

" " and decorative plants.

Canal Zone Experimental Gardens.

Seeds and other specimens were sent to :—

Director Imperial Institute, London ; Director Royal Botanic Gardens, Kew ; Harvard University, Cuba ; Mr W. Patterson, Uganda ; Mr T. B. Walsh, Durban ; Directeur Central de l'Inéac, Belgian Congo ; Mr R. H. Montgomery, Florida ; Dr C. Barbour, Cuba and numerous plants were supplied to tourists.

(n) *Plant Quarantine.*

The introduction of all plant material, fruits, vegetables and seeds is regulated under the "Plant Pests Ordinance" No. 12 of 1925 and its amendment, Ordinance No. 13 of 1936.

293 consignments were dealt with during the year and these are itemised as follows :-

	<i>Inspected and fumigated</i>	<i>Inspected and not fumigated</i>	<i>Total.</i>
Fruits and vegetables	87	104	191
Plants	13	10	23
Vegetable and flower seeds ...		79	79

All fruits, vegetables and plants entering the Colony are carefully inspected and, when necessary, fumigation with Hydrocyanic acid gas is carried out on Hodoul Island. Soil and packing materials are removed and burnt prior to fumigation.

(o) *Fisheries.*

The following table shows the quantity of guano, fishery products and birds' eggs yolk exported from the Colony during the last five years :-

	<i>1933</i>	<i>1934</i>	<i>1935</i>	<i>1936</i>	<i>1937.</i>
Guano, Tons.	12,307	12,062	10,235	23,942	9,594

Fishery products.

Calipee ... Kgs.	4,788	3,878	4,303	4,456	4,416
Fish, salted "	14,850	44,795	18,087	...	1,444
Shark fins "	...	1,413	1,144	1,342	766
Shark meat "	7,200	1,418	...	...	...
Trepangs ... "	1,933	3,837	1,547	359	208
Green turtle shell	514	109	168	240	115
Turtle meat (dried)	1,680	751	5,538	...	2,766
Turtle oil ... Lts.	700	400	1,984	1,383	67
Tortoise shell (Caret) Kgs.	1,191	1,104	742	1,095	896
Bone meal ... Tons.	...	...	...	...	30
Birds eggs yolk and albumen. Kgs.	57,400	49,900	49,350	30,100	27,890

There was a falling off in the export of guano during the year mainly owing to difficulty experienced in obtaining vessels to take it away. Added to this was a considerable increase in freight charges. Although, only a limited supply of high grade guano remains at Assumption there is a considerable quantity of low grade material which it may not pay to export. The exploitation of the deposits at Astove is now in progress and exports for the coming years should show a marked increase provided the shipping difficulty is overcome. A few thousand tons of guano will probably be shipped from Providence Island. The removal of guano from this Island which is detrimental alike to the existing coconut plantation, and to the future necessities of Providence and Cerf Islands is to be deplored. After the exploitation of the guano which is being taken from under bearing trees over a considerable area, the future welfare of the Island will entirely depend on its coconut plantations.

The export of salt fish revived slightly during the year owing to the efforts of a fisherman, who succeeded in producing a first class product. The development of a trade in salt fish would seem to depend on the provision of adequate capital, and a lowering of tariff barriers in neighbouring Colonies in favour of the Seychelles.

The export of turtle products shows little variation. There is no evidence to show that efforts to capture those reptiles have been relaxed. Hence a decrease in the export of these products may serve to indicate a decrease in the number of adult turtles. A considerable number of turtles are consumed in the Southern Islands and a fair number is brought to Mahé for the local market.

The restriction of the export of Calipee, Turtle meat and Turtle oil might be considered as a measure, likely to prove the most suitable to adopt for the purpose of conserving the reptile, increasing its number and diverting greater supplies towards local markets. The large decrease in the number of turtles which has occurred within living memory is testified to by all those with long experience of the Outlying Islands.

This year the inclusion of crushed bones in the above table relates mainly to turtle bones crushed in a small plant erected at Aldabra Island. This plant which is of recent construction handles bones shipped from the Islands of Astove, Cosmoledo and Assumption. The collection of these bones from the accumulations on the beaches and near sheds for preparing Calipee on the various Islands has merit from the sanitary point of view.

The export of tortoise shell shows a slight decline when compared with the previous year. There is a small local trade in manufactured articles and this could be increased with profit to this industry if any local artisans had the advantage of better training in the mounting and preparation of the articles.

The birds egg yolk export figure continues to show a decline which has been progressive for the last seven years since the industry first reached its full working order. In 1931, 102,150 kilos. of yolk, representing over 11,500,000 eggs, were exported. Today only 27,890 kilos or around 3,000,000 eggs are obtainable. Thus, in the seven years that this exploitation has been in progress, the nesting sooty tern population has been reduced by at least 50 per cent.

This rapid destruction of a bird which provides nearly the whole of the sea birds eggs consumed by the local market is most deplorable.

This Colony is in great need of cheap nutritious foods which will provide some variety to the monotonous diet consumed by the poorer classes and for this reason alone the sea birds of the Colony deserve full protection and encouragement.

The Fisheries Committee was reconstituted towards the end of the year, the number of its members being increased to eleven, and made representative, as nearly as possible, of all the interests concerned. It held one meeting at which the following amendments to the Fisheries Ordinance were amongst those recommended :-

- (1) To prohibit the obstruction of passes and channels in such manner as might prevent free ingress or egress of fish.
- (2) To provide for the registration of all fishing boats.
- (3) To introduce a minimum size limit for certain fishes that may be caught.

The Fisheries Guard in charge took 28 contraventions and seized 115 casiers of undersized meshes during the year.

(p) *Summary of reports received from the Imperial Institute during the year.*

Eucalyptus staigeriana. About 16 lbs of this oil were sent to the Imperial Institute for transmission to a firm of essential oil distillers in London, who had examined a sample previously submitted, and who had offered to carry out trials in order to ascertain the utility of the oil in the manufacture of compounds for use in soap and cosmetics.

A sample of the oil was found satisfactory on analysis by the Imperial Institute, from whose report the following passage may be quoted : "It will be seen that the tests carried out by the essential oil distillers have given very satisfactory results. It would seem therefore that the prospects of the successful utilisation of this oil in soap perfumery are quite promising, and it is anticipated that the oil will meet with an increasing demand as its properties become better known and are appreciated".

Cinnamon bark oil. Two samples of oil, one obtained from bark produced at the Botanical Gardens and the other from an estate, were sent to the Imperial Institute for report. The bark grown at the Botanical Gardens was obtained from 2 year old wood and the bark was distilled about 22 months after its collection. The distillation was done in 1936 and the report was received in 1937.

A summary of the Imperial Institute's report is as follows :- "The samples were found to contain 67 and 71 per cent of total aldehydes and to have constants agreeing with those recorded for oils distilled in Germany from Seychelles Cinnamon bark but not with the British Pharmacopeia requirements for oil of Cinnamon. Neither sample had the satisfactory flavour of the Ceylon oil; but the aroma was scarcely inferior. The two oils were much superior to samples from Seychelles previously examined at the Imperial Institute and were considered by essential oil distillers and merchants to be of marketable quality. It was pointed out in the report that the actual market value of the oil could only be ascertained when the trade had received and worked consignments from the Colony."

Coconut Shell Charcoal. In reply to a letter from the Department, the Imperial Institute furnished a statement dealing with the uses and marketing of coconut-shell charcoal. A list of firms consulted, with notes on their requirements and prices, along with an extract from the Ceylon Trade Journal for May 1937, dealing with the market for this charcoal, were also furnished by the Imperial Institute. The Information thus obtained was printed and copies were sent to planters and to persons likely to be interested in this trade.

(q) *Correspondence and distribution of information.*

535 letters were despatched from the Department's Office. The number of Minute Papers dealt with amounted to 1,501. Various pamphlets and copies of reports were distributed to planters interested.

SECTION III.

Financial Statements.

RECEIPTS.

The revenue consists of :-

Receipts from plantations	...	Rs 982.26
Sale of timber from Crown Lands	...	" 744.05
Rent of Crown Lands and Buildings	...	" 20,883.54
Royalty on guano	...	" 12,811.50
Royalty on timber from Aldabra Island	...	" 107.05
		Rs 35,528.40

EXPENDITURE.

The expenditure consists of :-

Personal Emoluments and Other Charges	...	Rs 26,696.93
Forestry, Rivers and Crown Land Reserves	...	" 1,917.91
Upkeep of Botanical and Public Gardens	...	" 3,072.08
Destruction of rats	...	" 1,665.79
		Rs 33,352.71

Expenditure under Grants made from the Colonial Development Fund :-

Plant propagation	...	Rs 5,149.17
Afforestation	...	" 3,768.81
Agricultural Student	...	" 2,885.89
Entomologist	...	" 9,701.82
		Rs 21,008.69

SECTION IV.

Summary of legislation affecting agricultural industries during the year.

Ordinance No. 1 of 1937 was enacted to establish and regulate the management and control of an Agricultural Bank for the purpose of granting long-term loans for agricultural purposes on the primary mortgage of landed property.

Minor amendments to this Ordinance were made by Ordinances Nos. 10 and 19 of 1937.

Ordinance No. 8 of 1937 amended the Cultivation of Sugar Cane and the Manufacture and Sale of Bacca Ordinance, 1928, (Ordinance No. 9 of 1928) so as to dispense with the personal attendance of the analyst in Court unless specially required by the other party in Court proceedings. A certificate of analysis is now accepted by the Court as being sufficient evidence.

Ordinance No. 15 of 1937 relating to the supervision of Factories and Machinery was enacted to control and supervise by means of a Board and inspectors the conditions concerning the employment of labour in factories and machinery in the Colony.

Ordinance No. 16 of 1937 amends the Outlying Islands Labour Ordinance (No. 5 of 1909) so as to prohibit the employment on the Outlying Islands of labourers otherwise than under a written or verbal contract of service entered into before the Crown Prosecutor. Power is also given to prevent the departure of any vessel having on board labourers otherwise engaged.

The Cultivation of Sugar Cane and the Manufacture and Sale of Bacca Ordinance (No. 22 of 1937) was passed to provide for the registration, on payment of a nominal fee of 10 cents, of all sugar cane plantations in the Colony and to permit the home manufacture of bacca in limited quantity free of charge. This Ordinance will come into force as from the 1st January 1938.

Ordinance No. 7 of 1937 amends the Sale of Produce Ordinance (No. 7 of 1919) so as to enable licences to be issued in respect of any licensable produce and to require a licensee to keep registers only in respect of the specific licensable produce in which he is licensed to deal.

Staff Changes.

Savings effected under the Grant made by the Colonial Development Fund Committee for the campaign to establish biological control of scale pests on coconuts has, with the Secretary of State's approval, enabled the Colony to have the benefit of the services of the Entomologist, Mr L. D. E. F. Vesey-Fitzgerald, for another year. In addition to supervising the effective distribution of the newly introduced scale predators Mr Fitzgerald will also give assistance with other Entomological problems.

The Senior Laboratory Assistant, Mr A. Morel, resigned his appointment on the 13th June. Mr Morel is now employed with Zanzibar Distilleries Limited.

The Forest Ranger of Praslin District, Mr E. Etheve, was transferred to Mahé on the 15th March. His duties in Praslin were taken over by the Asst. Inspector of Plantations, Mr A. Houareau.

Obituary.

It is with great regret that the death of Mr P. R. Dupont, the former Director of Agriculture, is recorded.

Mr Dupont died in Mauritius in January 1938.

Mr Dupont was appointed Curator of the Botanical Gardens in 1901 and retired in 1921. After a brief stay in Mauritius he returned as Director of Agriculture and continued in this post until his retirement at the beginning of 1934.

F. L. SQUIBBS,
Director of Agriculture

3rd May 1938.

APPENDIX J.

METEOROLOGICAL RETURNS FOR 1937.

1937	Months	Temperature						Rainfall		Winds		Deaths	Remarks.
		Barometer	Solar Maximum	Shade Maximum	Shade Minimum	Range	Mean	Amount in Inches	Relative Humidity %	Direction of Wind	Average force.	Deaths per month	
	January	30.037	104	83.0	74.5	8.5	78.7	18.82	74	NW.	5	38	
	February	30.050	126	81.4	74.8	6.6	78.1	9.60	75	NW.	4	40	
	March	30.016	115	85.6	76.5	9.1	81.0	2.88	72	NW.	4	32	
	April	30.026	104	86.3	76.6	9.7	81.4	10.92	76	NW.	5	35	
	May	30.070	112	86.4	74.8	11.6	80.6	10.30	71	SE.	4	37	
	June	30.075	104	82.5	75.5	7.0	79.0	1.97	74	SE.	4	34	
	July	30.053	109	81.2	74.1	7.1	77.6	2.50	73	SE.	11	35	
	August	30.087	108	81.1	75.2	5.9	78.1	0.35	75	SE.	12	81	
	September	30.100	110	82.3	75.3	7.0	78.8	9.34	77	SE.	4	30	
	October	30.096	104	83.5	74.5	9.0	79.0	6.82	77	SE.	6	39	
	November	30.045	103	83.9	73.8	10.1	78.8	9.00	73	NW.	4	50	
	December	30.050	112	83.6	73.6	10.0	78.6	10.47	77	NW.	5	39	

APPENDIX II.

Monthly Rainfall taken at the Port Office, Victoria, 1918-1937.

	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	Monthly Mean Rainfall.
January	24.18	18.02	32.68	15.80	5.83	19.31	12.00	25.25	10.77	7.84	16.72	13.19	6.18	11.16	15.13	16.96	12.85	19.35	15.50	18.82	15.38
February	4.64	11.94	5.95	13.36	1.78	14.29	1.85	13.65	15.85	0.60	14.78	12.44	8.85	18.68	1.00	12.05	21.36	12.31	8.56	9.60	10.17
March	2.33	12.86	12.58	4.75	11.94	12.15	15.14	22.76	7.48	1.62	22.72	14.75	7.19	2.02	12.12	9.01	6.63	14.27	2.43	2.88	9.88
April	2.31	6.53	0.76	8.58	3.57	9.07	16.27	14.52	10.42	5.13	14.74	5.66	6.55	2.21	0.93	7.00	4.16	10.95	6.45	10.92	6.83
May	2.92	13.42	6.66	7.66	5.73	8.17	4.93	5.70	16.26	6.71	15.64	3.78	3.51	9.80	5.53	6.01	5.65	6.58	13.13	10.30	7.40
June	0.95	9.25	3.50	1.20	4.10	4.47	3.42	1.16	15.94	7.24	2.69	0.67	3.62	4.06	1.87	4.05	2.54	6.27	4.83	1.97	4.19
July	1.41	4.78	2.39	7.05	2.16	0.48	7.07	4.98	11.12	1.92	3.12	1.36	3.42	2.44	2.44	2.06	22.90	13.63	4.91	2.50	5.11
August	1.78	0.44	0.87	1.06	1.63	4.37	0.91	5.79	2.14	1.05	0.55	1.79	1.87	1.14	1.64	2.02	14.30	3.50	13.12	0.35	3.01
September	14.23	4.85	Record No.	0.32	4.69	6.93	8.13	5.35	0.14	5.04	2.53	1.44	8.68	0.14	4.14	5.07	23.25	2.77	2.48	9.34	5.43
October	9.14	5.05		2.31	9.91	15.35	12.24	10.79	4.49	14.09	1.83	3.24	2.11	8.41	12.65	5.00	4.84	6.75	5.16	6.82	6.67
November	8.92	1.23		7.84	1.88	8.85	10.75	15.58	7.52	5.36	10.23	5.17	20.59	5.78	5.97	9.05	8.53	11.42	16.25	9.00	8.47
December	9.95	12.66	15.20	16.11	3.50	8.10	15.05	8.77	20.89	10.59	28.80	10.94	13.25	29.30	10.18	13.05	18.05	13.66	14.21	10.47	14.13
Total	82.79	101.03	80.54	86.58	57.22	101.62	118.36	114.30	123.02	67.19	134.35	74.43	85.82	95.14	73.60	96.06	145.06	121.46	107.06	92.97	

Average year = 98.93 inches.

APPENDIX III.

Crown lands. The following is a list of leased and unleased Crown Lands under departmental control :-

<i>Leased.</i>		<i>Date of expiry of lease.</i>
	<i>Name of land.</i>	
Victoria.	Terrain Dugand	1940
	Long Pier Wharves (5)	1941, 1942, 1944, 1944, 1980.
	„ Coal Islet (2)	1942, 1963
	„ Coal shed	1941
	Site of Seychelles Club	2021
	Tennis Court „	1938
	Town Comblage (2)	1940, 1945
	Mont Fleuri (2)	1939, 1939
	Saint Louis (2)	1938
Central Mahé.	Planeau and Bardeau	1943
South Mahé.	Terrain Mailliet	1946
	Anse la Mouche	1944
Praslin.	Savoie	1963
	Newcome	1946
	Pointe Chevalier	1942
	Merante	1938
Nearby Islands.	Felicite	1940
	Booby	1938
	Recifs	1943
	Seche	1938
Outlying Islands, Amirantes (Marie Louise, Remire, African Banks, Desneufs and Boudeuse).		1944
	Astove	1961
	St Fierre	1944
	Aldabra	1942
	Cosmoledo	1942
	Assumption	1942

Unleased

	<i>Name of land.</i>	<i>How disposed of.</i>
Mahé	Central area	Reserved as catchment area and for afforestation.
	Mamelle Estate	Departmental management.
	Hermitage Estate	„
	Gordon Square	Playing field.
	Surrounding Government House	Cinnamon area.
	Carnegie Library site	
	Fiennes Esplanade	
	Public Works Yard	
	Victoria (Quincy Street)	
Praslin.	Midlands Estste	Reserved as catchment area and for afforestation.
	Fond Boffay	Timber reserves.
	Anse Marie Louise and Fond Ferdinand	Coco de Mer reserves.
	Pointe Zanguilles	Timber reserves.
Islands.	Long Island.	Quarantine and departmental management.
	Round Island, Mahé.	Leper camp.
	Round Island, Praslin.	Leper camp.
	Curieuse Island.	Prospective Leper settlement.
	Mamelles Island.	Lighthouse and bird sanctuary.